CLAIMS

What is claimed is:

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1. ~~A method~~ comprising'

   a) providing a non-woven composite elastic material under tension;

   b) heating the composite elastic material;

   c) retracting the heated composite elastic material; and

   d) cooling the composite elastic material.

2. The method according to claim 1, wherein heating comprises heating the material by drawing heated air through the composite elastic material.

3. The method according to claim 1, wherein heating comprises heating the material to the softening point of the elastic layer.

4. The method according to claim 1, wherein retracting comprises retracting the material from about 2 % to about 15 %.

5. The method according to claim 1, wherein retracting comprises retracting the material from about 4 % to about 10 %.

6. The method according to claim 1, wherein heating comprises heating the composite elastic material on a first roller and cooling the material on a subsequent roller.

7. The method according to claim 1, wherein the composite elastic material is heated on a first roller, on a second roller, and cooling the material on a subsequent roller.

8. The method according to claim 6, wherein the speed of the material on the subsequent roller is about 2 % to about 15 % slower than the speed of the first roller.

9. The method according to claim 8, wherein the speed of the material on the subsequent roller is about 4 % to about 10 % slower than the speed of the material on the first roller.

10. The method according to claim 7, wherein the speed of the material on the subsequent roller is from about 2 % to about 15 % slower than the speed of the material on the second roller.

11. The method according to claim 10, wherein the speed of the material on the subsequent roller is from about 4 % to about 10 % slower than the speed of the material on the second roller.

12. The method according to claim 9, wherein heated air is drawn through the first roller and the second roller.

13. The method according to claim 9, wherein cool air is drawn through the subsequent roller.

14. The method according to claim 1, wherein the composite elastic material has a density less than about 0.085 g per cubic cm and has a CD tensile strength of greater than about 0.68 pounds.

15. The method according to claim 1, wherein the composite elastic material has a cup crush less than about 120 g per cm and a CD tensile strength of greater than about 0.68 pounds.

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16. The method according to claim 1, wherein the composite material has a cup crush to density ratio of less than about 1579 cm^2 and greater than about 950 cm^2.

17. The method according to claim 1, wherein the wherein cooling includes cooling the composite material at on the subsequent roller, and then cooling on the winder roll.

18. The method according to claim 17, wherein the wherein cooling includes cooling the composite material to first temperature on the subsequent roller and then cooled to a second temperature on the winder roll.

19. The method according to claim 18, wherein the first temperature is greater than the second temperature.

20. An apparatus for activating a composite elastic material comprising

a) a material source providing the composite elastic material;

b) a heating mechanism for heating the composite elastic material;

c) a retracting mechanism receiving the composite elastic material from the cooling mechanism; and

d) a cooling mechanism for cooling the composite elastic material from the heating mechanism.

21. The apparatus according to claim 20, wherein the material is a continuous web, the material is moved at a first speed and a second speed in the retracting mechanism.

22. The apparatus of claim 21, wherein the first and second speeds are different.

23. The apparatus of claim 22, wherein the first speed is greater than the second speed.

24. The apparatus of claim 23, wherein the first speed is about 846 feet per minute.

25. The apparatus of claim 21, wherein the material moves at a third speed in the retracting mechanism.

26. The apparatus of claim 25, wherein the first and third speeds are different.

27. The apparatus of claim 25, wherein the first speed is greater than the third speed.

28. The apparatus of claim 25, wherein the second and third speeds are different.

29. The apparatus of claim 25, wherein the second speed is greater than the third speed.

30. The apparatus of claim 25, wherein the second speed is less than the third speed.

31. The apparatus of claim 25, wherein the first speed is about 846 feet per minute.

32. The apparatus of claim 25, wherein the second speed is about 805 feet per minute.

33. The apparatus of claim 25, wherein the third speed is about 769 feet per minute.

34. The apparatus of claim 25, wherein the first speed is about 846 feet per minute, wherein the second speed is about 805 feet per minute, and wherein the third speed is about 769 feet per minute.

35. The apparatus of claim 25, wherein the retracting mechanism includes a first roller, a second roller, and a third roller, the material moves at the first speed on the first roller, the material moves at the second speed on the second roller, the material moves at the third speed on the third roller.

36. The apparatus of claim 35, wherein the cooling mechanism includes a winder receiving the material from the retracing mechanism, and the material moves onto the winder at a fourth speed.

37. The apparatus of claim 36, wherein the fourth speed is less than the first speed.

38. The apparatus of claim 37, wherein the first speed is greater than both the second speed and the third speed.

39. The apparatus of claim 36, wherein the first speed is about 846 feet per minute, wherein the second speed is about 805 feet per minute, wherein the third speed is about 769 feet per minute, and wherein the fourth speed is about 800.

40. The apparatus of claim 20, wherein the retracting mechanism comprises:

a first roller in contact with the material;

a second roller in contact with the material subsequent to the first roller;

wherein the heating mechanism comprises:

a heat source for supplying a heated gas;

a first vacuum inlet positioned within the first roller to draw the heated gas through the material and the first roller; and

wherein the cooling mechanism comprises:

a coolant source for supplying a coolant; and

a second vacuum inlet positioned within the second roller to draw the coolant through the material and the second roller.

θA_{10} 41. The apparatus of claim 43, wherein the material is a continuous web, the material exits the first roller at a first temperature, the material exits the second roller at a second temperature, the second temperature being less than the first temperature.

42. The apparatus of claim 41, wherein the retracting mechanism includes a third roller receiving the material from the first roller prior to the second roller, the material exits the third roller at a third temperature, and the third temperature is greater than both the first temperature and the second temperature.

43. The apparatus of claim 42, wherein the material at the material source is at a fourth temperature, and the fourth temperature is less than both the first temperature and the second temperature.

44. The apparatus of claim 40, wherein the third temperature is about 145 degrees F, the second temperature is about 118 degrees F, and the fourth temperature is about 80 degrees F.

45. The apparatus of claim 20, wherein the material moves from the material source at a speed of about 846 feet per minute and a temperature of about 80 degrees F.

46. The apparatus of claim 45, wherein the retracting mechanism moves the material at a first speed of about 846 feet per minute on the first roller and at a second speed of about 805 feet per minute on the third roller, and wherein the heating mechanism heats the material to about 145 degrees F when the material is traveling at the second speed on the third roller.

47. The apparatus of claim 20, wherein the heating mechanism heats the material while the material travels through the retracting mechanism, and wherein the cooling mechanism subsequently cools the material as the material travels through the retracting mechanism.

48. A composite elastic material prepared according to the process of claim 1.